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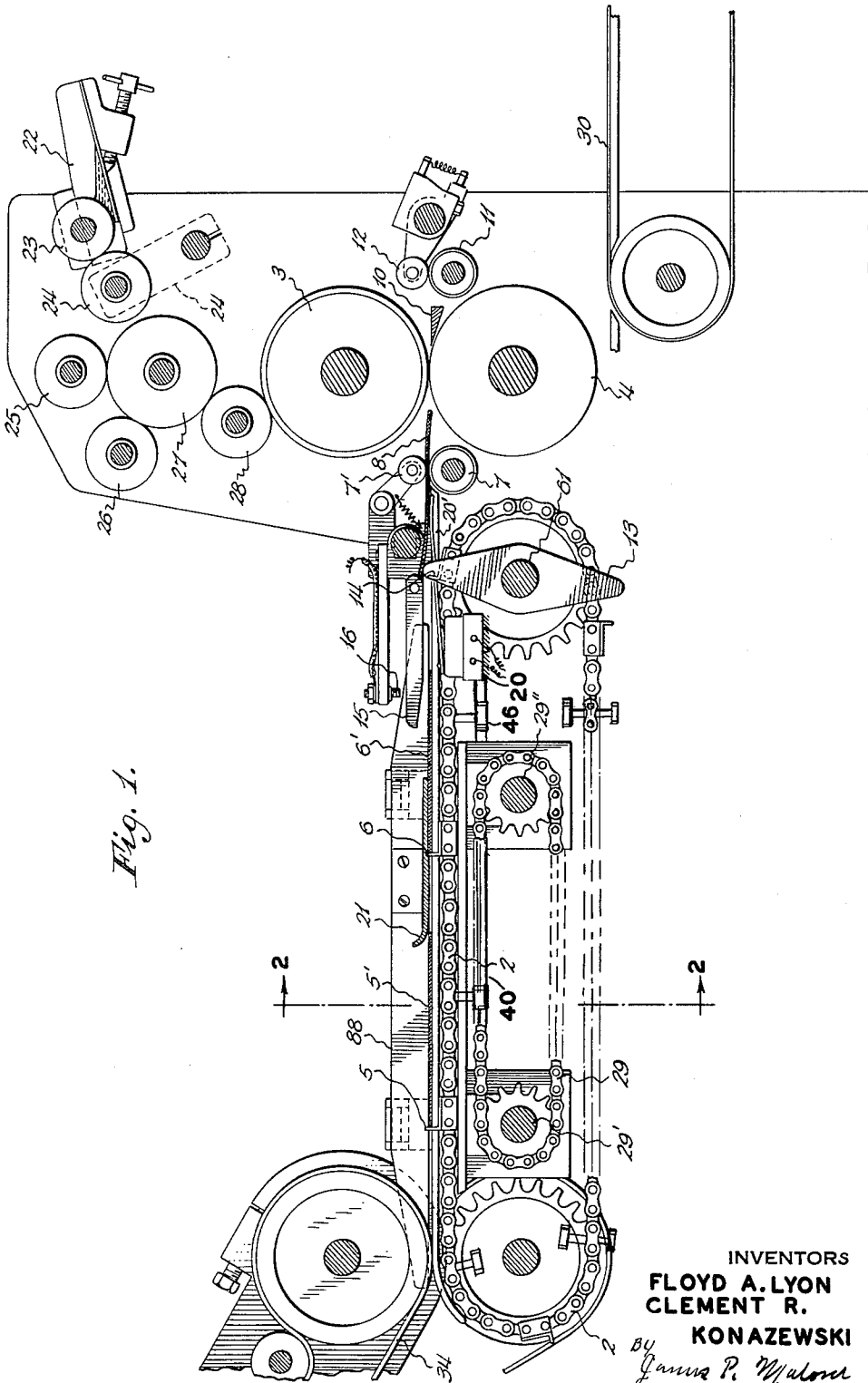
F. A. LYON ETAL

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ALIGNMENT MEANS FOR CONVEYOR

Filed March 19, 1962

2 Sheets-Sheet 1



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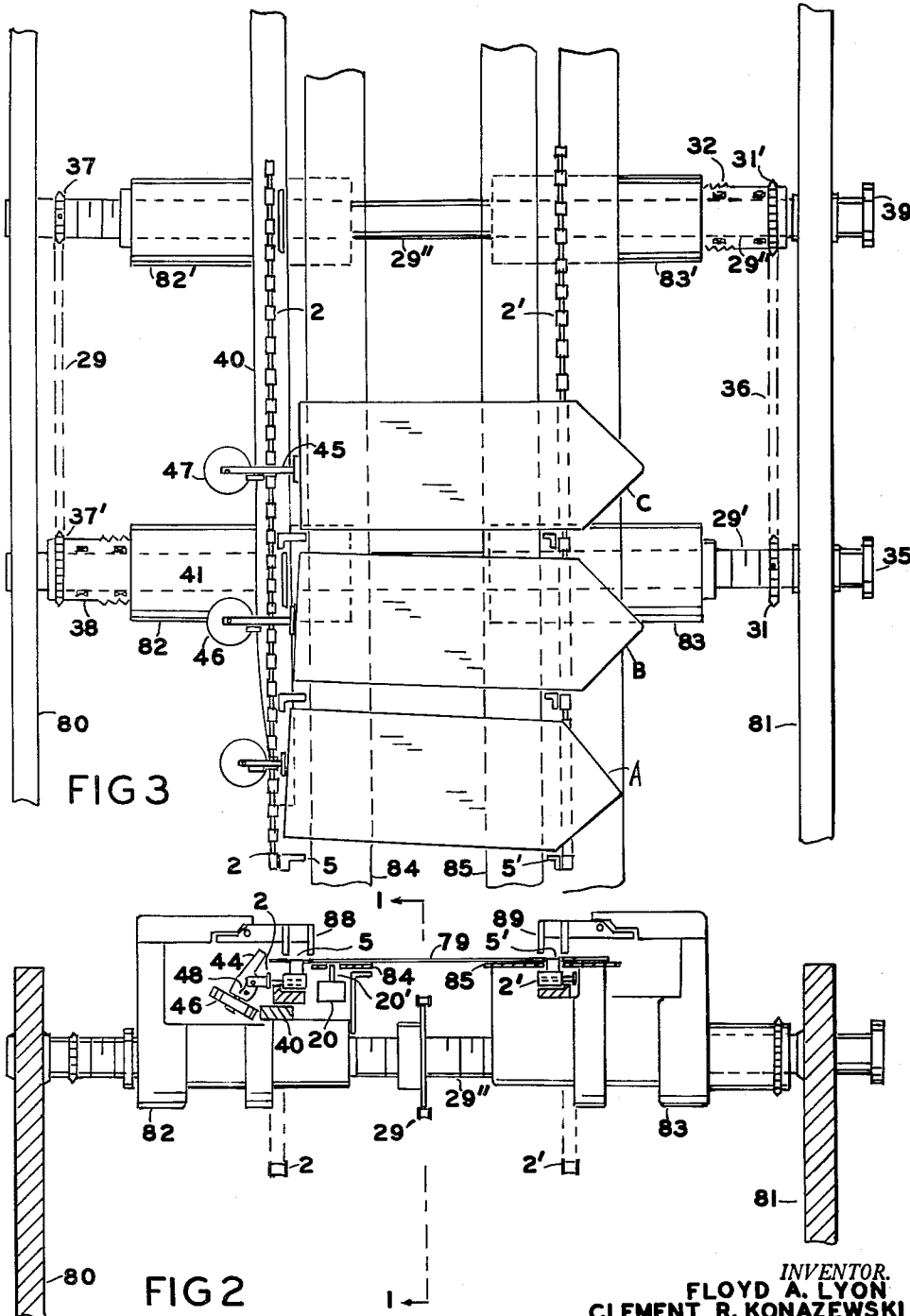
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2 Sheets-Sheet 2



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3,222,056

ALIGNMENT MEANS FOR CONVEYOR

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1 Claim. (Cl. 271—2)

This invention relates to alignment means for conveyors of envelopes or sheets of paper.

More particularly the invention relates to means for aligning envelopes on a horizontal conveyor for instance of the type used in printing presses as shown in Patent No. 2,787,214, granted April 2, 1957 for feeding means for high speed printing press.

The present invention is an improvement for aligning envelopes of the type having only one straight side, that is, where there is an extending flap on the other side. It is difficult to align such envelopes as no pressure can be placed on the tapering flaps.

The present invention solves this problem by providing a tapering side rail cam which runs along one side of the conveyor. A plurality of side pushers are pivotally mounted on the chain and have rollers which ride along the cam. The envelopes are fed to the conveyor supply off-center so that the side pushers are actuated by the rollers moving along the cam to move the envelopes into alignment. This method has been found to be much preferable to having a pair of side rails as any contact of the tapering envelope flaps with a side rail causes the envelopes to become misaligned. The side rail cam is adjustably mounted to accommodate different size envelopes.

Accordingly a principal object of the invention is to provide new and improved alignment means for conveyors of envelopes and paper sheets.

Another object of the invention is to provide new and improved side alignment means for conveyors of envelopes which have one straight side and an extending flap on the other side.

Another object of the invention is to provide new and improved side alignment means for conveyors of envelopes which have one straight side and an extending flap the other side, comprising a tapering side rail cam on one side and side pusher means actuated by the cam to align the envelopes.

Another object of the invention is to provide new and improved side alignment means for conveyors of envelopes which have one straight side and an extending flap on the other side, comprising a tapering side rail cam on one side, means to forward the envelopes off center into said conveyor, and means to laterally adjust said envelopes into alignment.

These and other objects of the invention will be apparent from the following specification and drawings, of which

FIG. 1 is a side sectional view of the embodiment of the invention taken along the lines 1—1 of FIG. 2.

FIG. 2 is a sectional view of the embodiment of FIG. 1 taken along the lines 2—2 of FIG. 1.

FIG. 3 is a plan detail view illustrating the operation of the invention.

FIG. 1 shows an elevation sectional view of an embodiment of the invention. The work pieces such as envelopes are placed by belts 34 on chain conveyors 2 and 2', which carry them to the right where they are ultimately inserted between the printing roller 3 and the impression roller 4. The chain drive 2 has pins 5, 6, etc., which serve to carry and register the work pieces 5' and 6' respectively, the rear edges of the work pieces being held against pins 5 and 6. The pins are adjustably connected

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to the chain 2 which is synchronized by intermediate gearing, not shown, with the printing roller so that the proper registration is obtained. When the work pieces reach the end of the chain drive they are gripped by a driven feed roller 7 and its spring loaded associated roller 7'. The work pieces, for instance envelope 8, is then inserted between the printing roller 3 and the impression roller 4. When the work piece emerges from the printing rollers, it is stripped from the bottom roller by a stripper bar 10 and fed between rollers 11 and 12.

The printing rollers 3 and 4 and feed rollers 7 and 7' are driven at the same surface speed as the chain 2. Therefore, there is no snatching of the work pieces from the chain conveyor. Since this is the case, it is necessary to lift the rear edges of the work piece so that they will clear the registration pins at the end of the chain. Referring to work piece 8, its rear edge has been lifted by the cam 13 over the pin 14. If the cam 13 were not provided the rear edge of the envelope 8 would be buckled since it would not clear the pin as the pin went around the sprocket. The cam 13 is mounted on shaft 61 and driven in timed relation to the passage of pins 5 and 6.

Means are also provided for stopping the flow of work pieces if there is a jam-up, for instance if more than one piece is fed in at a time. If this occurs, the envelopes will jam up under the pivotally mounted contact member 15 causing it to touch the contact 16, thereby completing a circuit which will cut off the vacuum supply to the vacuum feeder 1 as will be more fully discussed.

Means are also provided for preventing damage and spoilage due to a possible skipping of a work piece. If a work piece were skipped, the ink on the printing roller 3 would be applied directly to the impression roller 4 so that succeeding pieces would be smeared with ink causing a spoilage of many pieces before this condition might be noticed. The means to avoid this condition include the microswitch 20 which is connected in a circuit as will be more fully discussed in connection with later figures. Attention is called to the fact that the microswitch 20 has its arm 20' contacting the work piece 8. In other words, the microswitch senses whether or not a work piece is where it is supposed to be. If this is not the case, the microswitch 20 will initiate a series of operations, which will cause retraction of the impression cylinder 4, as shown in my above mentioned patent. Ink is applied to the printing roller in a conventional manner from the ink reservoir 22 through ink feeding rollers 23, 24, 25, 26, 27 and 28. The roller 24 is mounted on an oscillating arm 24'.

It should be noted that the feed rollers 7, 7', 11 and 12 grip the work pieces at each end while it is being printed. In other words, the feed rollers 7 and 7' let go. This insures positive registration of the envelope. At the end of the printing operation the work pieces are dropped on the moving belt 30.

Chains 29 and 36 rotate shafts 29' and 29'' which adjust the side guide rails as discussed in connection with FIG. 3. Chain 29 is actuated by an adjustment knob 39, FIG. 2, on shaft 29'', and chain 36 is actuated by knob 35.

The top guide 21 is connected to the guide member 88. The tapering side rail cam 40 is mounted on the members 82, 82'. The envelopes are removed by the belt 30.

FIG. 2 shows a sectional view taken along the line 2—2 of FIG. 1. This figure shows the frame side members 80 and 81 which support the shafts 29' and 29''. Adjustable supporting members 82, 82' and 83, 83' support the bottom guides 84 and 85. Member 82' is threaded to shaft 29'' and is adjusted in and out when the shaft 29'' is rotated by the knob 39. Members 82 and 82' are simultaneously adjusted by means of chain 29. Members 83,

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83' are similarly adjusted by knob 35 on shaft 29' as will be explained.

The envelope 79 is held down by the pivotally mounted guide members 88 and 89 which ride on the work pieces to keep them in good contact with the supporting rails 84 and 85. The work pieces are registered by the pins 5 and 5' which are mounted on the chains. Since the chains are geared to the printing rollers, the relationship of the pins is synchronized with that of the printing rollers for purposes of registration. The micro switch 20 and its arm 20' are actuated by the pressure of the piece passing over it. The guides are slotted to permit the arm 20' to extend through them. Side pusher 44 is mounted on chain 2 and is actuated by roller 46 which rolls along cam 40. The roller is spring loaded against the cam by spring 48.

FIG. 3 is a plan view illustrating the operation of the invention. The envelopes A, B and C are of the type having extending flaps so that they cannot be conveniently aligned with a pair of side rails. The envelopes are fed slightly off-center so that they will come in contact with the side pushers 44, 45 which move rollers 46, 47 which ride along the curved tapering portion 40' of the cam 40. Then, as the chains 2 and 2' push the envelopes along by means of the pins 5 and 5', the rollers come in contact with the side of the cam 40 and the envelopes are gradually moved over to the position shown by the envelope B and the envelope C. The pivotally mounted top guide members 88 and 89 provide sufficient frictional drag on top of the envelopes so that they are not pushed too far to the right in FIG. 3. Cam 40 is adjustable axially by means of slots 41 and 42 and corresponding bolts threaded into guide 84.

Knob 39 adjusts the members 82, 82' and cam 40 sideways. Knob 39 turns shaft 29'' which is threaded into member 82'. Sprocket 37 is pinned to shaft 29'' and connected by chain 29 to sprocket 37' which is pinned to adapter 38 which floats freely on shaft 29'. Adapter 38 is threaded into member 82. Therefore when sprockets 37, 37' are turned, members 82 and 82' are moved in and out.

Similarly, knob 35 adjusts members 83, 83' sideways. Knob 35 turns shaft 29' which is threaded into member 83. Sprocket 31 is pinned to shaft 29', and connected by

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chain 36 to sprocket 31' which is pinned to adapter 32 which floats freely on shaft 29''. Adapter 32 is threaded into member 83'. Therefore, when sprockets 37, 37' are turned, members 83, 83' are moved in and out.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof which is defined by the following claim.

I claim:

Conveying means for blanks having one straight end and one irregular end,
a pair of bottom rails to support said blanks,
a pair of driven chains extending parallel to said rails,
a plurality of locating pins mounted on and equally spaced along said chains, said pins extending above said rails and being adapted to push blanks along said rails,
and means to align blanks having one straight end and one irregular end comprising means to push and align said blanks in one direction with reference to one side only of said conveying means comprising,
a plurality of side pushers pivotally mounted on one side on one of said chains,
a long tapering side rail cam mounted along one of said bottom rails, said cam being adapted to activate each of said pushers to gradually push the straight end of one of said blanks sideways into predetermined alignment as said pushers ride with said blanks in a horizontal plane for a distance equal to the lengths of at least four blanks.

References Cited by the Examiner

UNITED STATES PATENTS

1,378,205	5/1921	White	271—48
1,948,142	2/1934	Swift	271—45
2,699,940	1/1955	Huck et al.	271—49
2,729,136	1/1956	Feick et al.	271—49 X
2,787,214	4/1957	Halahan et al.	101—232
2,809,831	10/1957	Nordquist	271—49 X
3,001,787	9/1961	Socke	271—49

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